

Comments for Draft Revisions *(Not Applicable to Directives; Refer to Directive Management Officer for Directive Comment Format)*

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Comments Submitted By: TOYOTA BOSHOKU CORPORATION

Organization: Technical Administration Div.

Phone:

#	Document Name	Page Number	Paragraph Number	Referenced Text	Comment/Rationale or Question	Proposed Resolution	Comment Type (Conceptual, Editorial, or Format)	Disposition/Response to Comment
	PS-AIR-21-130-03-01 Clarification for Non-TSO Functions in Seats	1	Definition of Key Terms	"Descriptive data"	This policy statement and TSO-C127b say what kind of information should be submitted. However, how should the information be documented? When each applicant make documents in different ways, it might be inconvenient for FAA to review the information.	Preparing the sample or template of "Descriptive data" as an attachment of this policy or another memorandum.	Editorial	Partially Accepted. There is no standard documentation method. However the FAA did provide a non-required example in FAA policy PS-AIR100-9/8/2003-127, Standard Content and Format for the Installation Instructions and Limitations Required by TSO-C127a
	PS-AIR-21-130-03-01 Clarification for Non-TSO Functions in Seats	2	Policy Clarification Background	Acceptance of the NTFs is done on a "non-interference" basis relative to the compliance of the TSO requirements for a given article;	We can't imagine what kind of function "interferes" the compliance of the TSO requirements. The example of "interference" would be conducive to better understand of "non-interference".	Add the example of "interference" of the compliance of the TSO requirements.	Editorial	Accepted. A positive non-interference example is already provided with the reading light. Another example would be an IFE monitor that does not meet flammability or produces unacceptable HIC values.
	PS-AIR-21-130-03-01 Clarification for Non-TSO Functions in Seats	3	Policy	General	[Question]	–	Editorial	Noted. We encourage
	PS-AIR-21-130-03-01 Clarification for Non-TSO Functions in Seats	4	Policy Clarification Classification of TSO Functions and Non-TSO Functions(NTFs) Table 1	General	[Question] Are the corded electrical devices (such as video system controllers) TSO Function or NTF?	Add "corded electrical devices" in the Table 1 or Q7 of Frequently Asked Questions.	Editorial	Partially Accepted. However we consider this part of the in-flight entertainment system that is already called out in Table 1.

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PS-AIR-21-130-03-01 Clarification for Non-TSO Functions in Seats	5	Frequently Asked Questions Q2	Why does the FAA require the declaration of non-TSO functions ?	The current wording of "FAA require" causes misinterpretation that the applicant must declare all of the NTF within a TSO article. We recognize that the declaration of NTF is optional.	Add new Q&A such as following: "Q: Should all of the NTF integrated into the seat be declared and substantiated? A: No. NTF should be declared and substantiated only if you expect the NTF to be accepted by the FAA and to be described in the TSOA letter."	Editorial	Not Accepted This policy statement is clarifying that it is not optional to declare NTF. Additional language has been added to Q1/A1.
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Comments Submitted By: Johnathan Archer

Organization: GAMA

Phone: 920-850-8110

#	Document Name	Page Number	Paragraph Number	Referenced Text	Comment/Rationale or Question	Proposed Resolution	Comment Type (Conceptual, Editorial, or Format)	Disposition/Response to Comment
1		General	Table 1		This policy statement appears to have taken away what industry wanted by having non-TSO functions (NTF). The primary purpose of NTF is to have a product that the installer can take "off the shelf" and install into the airplane, hopefully not having to collect any additional data to support the assembly itself, but only the			Not Accepted. We disagree as this was not the FAA's intent with the non-TSO function policy. The policy was primarily developed to avoid the need to repeat testing already required by the TSO. The FAA can only attest to the
2			Table 1	Seat Accessories	There is seemingly a fine distinction being drawn between seat accessories such as reading lamps or in-flight entertainment devices and seat accessories such as cup holders, coat hooks, etc. The difference may be simply as stated - that the latter group, per FAQ #7, are explicitly required to be evaluated as part of the applicable Seat MPS. We suggest that Table 1 is updated to draw a clearer distinction on how seat accessories are classified.			Accepted. We agree with the commenter that there is a fine distinction and in some cases may or may not be a NTF, however since these common non-powered features are on most seats, we intend to simplify the NTF reporting requirement by categorizing these common components as not a NTF.
3			Table 1	Airbags	It is implied that the MPS of the TSO requires Head Injury Criteria (HIC) values and this is a TSO function. We don't believe that the TSO nor the MPS require HIC as this is an installation level requirement. The TSO is primarily for structural requirements which the airbags may or may not have an effect on. We do agree, however, that the airbag restraints are critical to the MPS of the seating system.			Partially Accepted. We agree that HIC is not a TSO requirement for static seats, but it is a requirement for dynamic seats. We have updated Table 1 accordingly.
4		General			An additional statement or note may be required to clarify the process or agreements required between the TSO Holder and the Installer regarding changes to NTFs. Although these changes may be minor at an assembly level or have no effect on the MPS, they may have an effect on the installation.			Accepted. We added a new section for design changes to facilitate this point.

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Comments Submitted By: Raki Islam

Organization: SAE Ad Hoc Working Group

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#	Document Name	Page Number	Paragraph Number	Referenced Text	Comment/Rationale or Question	Proposed Resolution	Comment Type (Conceptual, Editorial, or Format)	Disposition/Response to Comment
1	PS-AIR-21-130-03-01	5	N/A	See comment	FAQ Q1 & Q2 imply that all NTFs must be declared in the TSO-C127b application. The ad hoc working group's understanding to date is that declaration of NTFs is optional. Comment 32 of the FAA's disposition of comments to TSO-C127b states that the TSO does not require declaration of NTFs. Is the FAA's expectation that all NTFs now be declared?		Conceptual	Noted. The expectation is to declare the non-TSO functions. The disposition of comment #32 of TSO-C127b was written in error as TSO-127b states "Identify functionality or performance contained in the article not evaluated under paragraph 3 of this TSO (that is, non-TSO functions)." This policy seeks to clarify the requirements for non-TSO functions as it applies to seats.
2	PS-AIR-21-130-03-01	5	N/A	See comment	FAQ Q1 & Q2 imply that all NTFs must be declared in the TSO-C127b application. The also means that all attributes of the seat not explicitly covered by the TSO-C127b minimum performance standards have to be evaluated by the seat manufacturer for their potential to affect airworthiness. Does the FAA expect the TSO holder to identify the attributes of the NTF outside the scope of the TSO, be responsible for the performance of the NTF and its potential to affect airworthiness?		Conceptual	Noted. As mentioned in Q1/A1 the FAA expects the TSO holder to identify non-TSO functions. The responsibility for the performance of the NTF and its potential to affect airworthiness is addressed in Q4/A4 of the policy.

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3	PS-AIR-21-130-03-01	4	N/A	See comment	The ad hoc working group understands that FAA Order 8110.4C 6-9 a.(3) "This guidance also allows the ACO to acknowledge... testing accomplished on the non-TSO function... to preclude the need for repeated evaluations for each installation approval." provides the TSO holder the ability to collect additional data for NTFs, for the FAA to acknowledge this data and for the data to be used by the installer as valid data. Table 1 (last line) and FAQ Q3 state that data used for substantiation of airworthiness requirements other than those of the TSO MPS declared under the TSO must be separately evaluated. Can additional data collected by the TSO holder, outside of that required to show that the NTF does not interfere with the TSO MPS, be considered valid by the installer, or when evaluating such data, must an installer require additional or repeat testing to be performed under the installer's oversight for the data to be considered valid?		Conceptual	This question is similar to question 1 by GAMA, please see the disposition to that comment.
4	PS-AIR-21-130-03-01	4	N/A	See comment	Table 1 indicates that backrests, leg-rests, and headrests are TSO functions. What if these features are motor driven? Are they still TSO functions? Such motorized functions require additional data (e.g., DO-160 qualification data) for installation. Given that additional review is required for installation whether the function is a TSO function or a non-TSO function (according to FAQ Q7 in the policy statement, for example), what difference is there between the two functions and what is the point of differentiating them as TSO and non-TSO functions? FAA Note: On September 15, 2015 the FAA asked for clarification to this comment. Members of the SAE Ad Hoc group indicated confusion as for instance a head rest may be a non-TSO function for a forward facing seat, but a TSO function for aft facing seats based on specific requirements in the TSO to support the head.		Conceptual	Noted. This question has been incorporated into the Question and Answer section of the policy. In general, the items in Table 1 discuss the adjustable aspects of those features, and not the capability of the head or backrest.

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5	PS-AIR-21-130-03-01	N/A	N/A	See comment	The ad hoc working group understands that changes to a TSO seat are evaluated from the perspective of the TSO MPS only. Changes involving NTFs are generally minor because their incorporation does not require a complete reevaluation of the design. Can a seat manufacturer add an NTF a minor change to a previous seat TSO authorization? If yes, must the NTF data be submitted to the FAA for specific review and acceptance, or can the normal minor change practice (six month window to submit notification and data) be followed? Using the case of IFE as an example, can the seat manufacturer consider the addition or change of such equipment as a minor change (assuming the TSO holder notifies the installer of the change), or must a new or revised TSO application be submitted to the FAA with a declaration of the new IFE as an NTF?		Conceptual	This question has been incorporated into the new section titled Design Changes.
6	PS-AIR-21-130-03-01	N/A	N/A	See comment	The industry expended considerable effort to develop a means of being compliant with AC 21-49, including the development of SAE ARP 6448. This effort was primarily targeted at IFE because the seat manufacturer is frequently not involved in the selection of the IFE. However, the industry understands that AC 21-49 applies to all equipment integrated in the seat that has electrical attributes outside the scope of the TSO. Does anything in this proposed policy alter the guidance provided in AC21-49 or the means of compliance defined in ARP 6448?		Conceptual	We do not anticipate any changes with regards to compliance to AC 21-49 or to our policy regarding the use of ARP 6448. This question has been incorporated into the newly added section "Effect of this policy statement on AC 21-49"
7	PS-AIR-21-130-03-01	N/A	N/A	See comment	If the applicant is already following AC21-49 option 7.b to evaluate AC21-49 Table 1 attributes of the integrated electronic components on a seat under paragraph 3 of TSO-C127b do those attributes of the electronic component have to be declared as NTF?		Conceptual	This question is answered in the re

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8	PS-AIR-21-130-03-01	4	N/A	See comment	<p>The specific example in Table 1 of airbags being a TSO function is more complex than it appears. Airbags are acknowledged by the FAA as being new and unusual and the FAA has published Special Conditions to address their installation. The performance of the airbag may affect the performance of the seat in the tests required to meet the TSO MPS. The ad hoc working group considers that airbags have both TSO functions and NTFs. When airbags operate to keep the ATD upright they influence the structural loading of the seat and its ability to meet the TSO MPS. When airbags operate to prevent head contact with an object they influence HIC, one of the TSO MPS. Other functions, such as airbag performance, inadvertent deployment, egress and lightning and HIRF protection have no MPS and can only be found compliant to Special Conditions by using additional data. These functions of the airbag are thus NTF. Can the FAA provide the background regarding their definition of airbags as a TSO function?</p> <p>The ad hoc working group recommends that Table 1 be modified as shown in the next column.</p>	<p>Item: Airbags Classification: <i>Contains both TSO and non-TSO functions</i> Explanation: <i>The airbag functions to protect the occupant during the dynamic test and alters how the seat meet the TSO MPS. These are TSO functions of the airbag. Other functions of the airbag, such as its ability to withstand lightning strikes, prevent inadvertent deployment and not impeded egress once deployed are NTF because they have no MPS.</i></p>	Conceptual	<p>The function of the airbag is to protect the occupant therefore it is a TSO-127b function. Inadvertent deployment and the ability to withstand lightning strikes are all capabilities, and not functions. However some of these capabilities may be appropriate to test in order to show continued compliance to the TSO.</p> <p>This aspects of this questions has been added to the Policy under a new section: "TSO Function Technologies Not Explicitly Addressed in the Seat TSO"</p>
9	PS-AIR-21-130-03-01	4	N/A	See comment	<p>Is all HIC data considered to be part of the TSO? For example, if it is possible for the head to impact a monument other than a seat, can HIC data for such cases be included as part of the seat TSO? Or can only data for impact on the seat itself (i.e., from the row behind) be included?</p> <p>FAA Note: On September 15, 2015 the FAA requested clarification to this comment as there are requirements in TSO-C127b that allow such data to be collected. Some members of the Ad Hoc group indicated that the installer may not be able to use certain types of HIC data if the head strikes various interior monuments that are not part of the seat TSO design.</p>		Conceptual	<p>This is question is out of scope from this policy statement and it is already addressed in section 5.3.9.4 of AS 8049b and incorporated by reference by TSO-C127b. The TSO provides a set of minimum requirements, and the applicability of the TSO data for installation compliance must be evaluated on a case by case basis by the installer.</p>

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10	PS-AIR-21-130-03-01	N/A	N/A	See comment	Some members of the ad hoc working group have, in the past, used the non-TSO function provision of FAA Order 8110.4C to include data for the non-TSO function, beyond that required by the TSO minimum performance standards, in the TSO application to support seat installation. The FAA acknowledged the data in the TSOA as valid for the performance defined for the non-TSO function. The ad hoc working group considers that this is a workable system and requests that the FAA reconsider the draft policy to maintain this ability. For example, the collection of environmental data under DO-160.		Conceptual	Noted. This policy provides an acceptable approach for all new applications; however it does not impact previous TSOAs granted. This policy does not preclude the TSO holder from collecting test data that is not explicitly required by the TSO, however the data must be used to show compliance to a TSO requirement. We anticipate for some applications, testing certain components to DO-160 may be appropriate and acceptable in order to demonstrate compliance to the TSO.
11	PS-AIR-21-130-03-01	N/A	N/A	See comment	FAA Order 8110.4C 6-9 (6) states "The TSOA letter conveys design and production approval for the TSO function as well as design acceptance... and production approval for the non-TSO function." With regard to NTFs on seats, what extent does a TSOA confer production approval for the NTF and to what extent must a TSO holder maintain configuration control for the NTF? Can a TSO holder issue FAA form 8130-3 to a seat containing NTFs, and how should the form be completed in this case?		Conceptual	Noted. The TSOA is design and production approval for the article. Therefore if the components that enable the NTF are defined in the TSO design (descriptive) data, then they are part of the design that has production approval under the TSOA. Design control of NTF must be controlled for compliance to the TSO MPS, such as is defined explicitly for electrical components that may or may not be deemed as NTF in AC 21-49. Issuance of the 8130-3 is acceptable provided the NTF are defined as part of the TSO article design and the article conforms to the approved design.

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Comments Submitted By: Tom Knott, Interior Compliance DER

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#	Document Name	Page Number	Paragraph Number	Referenced Text	Comment/Rationale or Question	Proposed Resolution	Comment Type (Conceptual, Editorial, or Format)	Disposition/Response to Comment	
1	Clarification for Non-TSO Functions in Seats (PS-AIR-21-130-03-01)		2	Current Regulatory and Advisory Material	(see comment)	does not mention SAE ARP6448, "Gaining Approval of Seats with Integrated Electronic Components in Accordance with AC21-49 Section 7.b"	this referenced document will become moot after issuance of this ARP. Perhaps list in "Relevant Past Practice"	Conceptual	This is a similar comment to comment #6 from the SAE ad hoc Group. Please see the coment disposition to Comment #6 from the SAE ad hoc group.
2	Clarification for Non-TSO Functions in Seats (PS-AIR-21-130-03-01)		2	Background, second bullet point	"Additional substantiation that is not required by the seat TSO MPS may be required by the TC/STC applicant to show compliance to the applicable aircraft airworthiness requirements."	Perhaps list a few applicable airworthiness requirements at the aircraft-level installation. May be difficult without turning this into a full-blown compliance checklist (which is inapplicable to illustrate the example given here)	"Additional substantiation that is not required by the seat TSO MPS may be required by the TC/STC applicant to show compliance to the applicable aircraft airworthiness requirements, such as electrical systems or cabin safety requirements for the reading light example."	Conceptual	Noted. We concur in principle, however we do not wish to make a list that may infer limitations on the applicability of airworthiness regulations.
3	Clarification for Non-TSO Functions in Seats (PS-AIR-21-130-03-01)	2, 3, 5, 6	several locations throughout document	"TC/STC applicant"	While a TC or STC is a very common way to install a TSO'd article such as a seat), there are also other methods such as Engineering approval (8110-3) or others (which are not necessarily Design approvals - meeting 14CFR25.785(b) Amdt 25-0 to 25-64, 14CFR25.785(c) Amdt 25-72 and 25-88). This is hinted in the text at the top of page 3.	Change wording to "TC/STC applicant or installer"	Conceptual	Partially Accepted. We concur with ithe ntent as the expectation is for this approach to be used for engineering approvals for modifications as well. The language has been changed to use TC/STC as an example but not limit other applications. The new phrase states "installation design approval (e.g. TC/STC) applicant"	